

Amendment  
Serial No. 10/550,102  
Attorney Docket No. 053057

### **REMARKS**

Claims 1-10 were pending in the present application. Claims 1-3 and 9 are rejected. Claims 1, 3, 9 and 10 are herein amended. New claims 11-14 are added herein. Claims 2 and 4-8 are herein cancelled without prejudice. Applicants thank the Examiner and his mentor for the courtesies extended in the telephone interview of July 11, 2007. Applicants' Statement of the Substance of the Interview is incorporated herein.

### **Preliminary Comments**

In Applicants' review of the application file, it was noted that the Filing Receipt states that the PCT application claims priority to a U.S. Provisional Application Number 60/454,824. This appears to be an error on the part of the U.S.P.T.O., since the PCT application does not refer to this Provisional Application. Accordingly, Applicants will subsequently file a request for a corrected Filing Receipt in order to correct this error.

### **Restriction/Election**

The Office Action acknowledges the election without traverse of Group I (claims 1-5 and 9), and of species Sequence ID 1. The Office Action notes that claims 4 and 5 represent modified forms of SEQ ID NO: 2, not SEQ ID NO: 1.

In response, Applicants herein cancel without prejudice claims 4 and 5. Applicants respectfully retain the right to file a divisional application directed at claims 4 and 5 at a later date.

Amendment  
Serial No. 10/550,102  
Attorney Docket No. 053057

**Applicants' Response to Claim Rejections under 35 U.S.C. §101**

**Claims 1-3 and 9 were rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.**

The Office Action states that the claims recite a polypeptide which can be naturally occurring (for example in spider venom), and has not been isolated or removed from a naturally occurring environment. The Office Action thus concludes that the claimed subject matter reads on a product of nature. The Office Action recommends amending the claims to recite "an isolated polypeptide." However, as discussed in the telephone interview, it is more appropriate to amend the claims to recite "a purified polypeptide." Thus, Applicants herein amend the claims accordingly. Favorable reconsideration is respectfully requested.

**Applicants' Response to Claim Rejections under 35 U.S.C. §112**

**Claim 3 was rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.**

The Office Action states that claim 3 is drawn to a polypeptide of which one or several of the amino acids have been deleted, substituted, inserted or added. It is the position of the Office Action that this claim is broad in scope and nearly any polypeptide could meet this claim limitation. The Office Action notes that since the claim refers to disulfide bond formation and channel inhibiting activity, a more specific description of the protein structure and modified residues would be needed to predict the effects of the modifications.

In response, Applicants herein amend claim 3 in order to more specifically describe the claimed invention. Applicants herein amend claim 3 in order to require that of SEQ ID NO: 1, “one or two of the amino acids thereof have been deleted, substituted, inserted or added.” At paragraph [0098] of the specification, it is described that not only TVP004 (SEQ ID NO: 2), but also TVP017 (SEQ ID NO: 16) and TVP019 (SEQ ID NO: 17) have inhibiting activity. This is evidence that low molecular weight peptides from spider venom, GsMTx-4, show mechano-sensitive channel inhibiting activity even if one or two of the amino acids thereof have been deleted, substituted, inserted or added.

As shown in paragraph [0096], SEQ ID NO: 1 corresponds to TVP003, and SEQ ID NO: 2 corresponds to TVP004. As depicted in Figure 7, the disulfide bonds of TVP003 and TVP004 are different. However, paragraph [0098] shows that low molecular weight peptides from spider venom, GsMTx-4, show mechano-sensitive channel inhibiting activity even if one or two of the amino acids thereof have been deleted, substituted, inserted or added. Thus, Applicants respectfully submit that “A purified polypeptide or salt thereof consisting of SEQ ID NO: 1, of which one or two of the amino acids thereof have been deleted substituted, inserted or added, having a disulfide bond,” shows mechano-sensitive inhibiting activity.

Additionally, Applicants herein add new claims 11-14, which more specifically describe the protein structure, in several different ways. New claim 11 recites that one amino acid is deleted, substituted, inserted or added. New claims 12 and 13 recite that one or two of the amino acids are substituted. Finally, new claim 14 recites that the cysteine residues are not deleted,

Amendment  
Serial No. 10/550,102  
Attorney Docket No. 053057

substituted, inserted or added. Applicants respectfully submit that these new claims sufficiently comply with 35 U.S.C. §112. Favorable reconsideration is respectfully requested.

**Claims 1-3 and 9 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.**

The Office Action notes that claims 1-3 and 9 refer to an “intermolecular bond” between two cysteines. The Office Action states that it appears that the term “intramolecular bond” would be more appropriate. However, in the telephone interview of July 11, 2007, it was agreed that neither “intramolecular” or “intermolecular” was necessary. Thus, Applicants herein amend the claims in order to recite only “disulfide bonds.”

The Office Action notes that claims 1-3 and 9 refer to an amino acid sequence which is “represented by” a sequence such as SEQ ID NO: 1. The Office Action states that because the scope of “represented by” is unclear, the claims are broadly interpreted to include larger peptides that include SEQ ID NO: 1. In response, Applicants herein amend the claims in order to more clearly recite the claimed subject matter. For example, Applicants herein amend the claims to recite “A purified polypeptide or salts thereof consisting of: SEQ ID NO:1.” Applicants respectfully submit that due to this amendment, the Office Action may not properly interpret the claims to include “larger peptides that include SEQ ID NO: 1.” Favorable reconsideration is respectfully requested.

Amendment  
Serial No. 10/550,102  
Attorney Docket No. 053057

**Applicants' Response to Claim Rejections under 35 U.S.C. §102**

**Claim 2 was rejected under 35 U.S.C. §102(b) as being anticipated by Ostrow et al. ("cDNA sequence and in vitro folding of GsMTx4, a specific peptide inhibitor of mechanosensitive channels," *Toxicon* 42 (2003) 263-274).**

It is the position of the Office Action that Ostrow discloses the invention as claimed. In response, Applicants herein cancel claim 2 without prejudice. Thus, the rejection is moot.

Additionally, Applicants note that Ostrow was published in September 2003. The present invention claims priority to a Japanese application filed on March 26, 2003. Thus, Ostrow may be removed as a reference under 35 U.S.C. §102 by the submission of a verified English language translation. Accordingly, Applicants herewith submit a verified English language translation of the priority document in order to perfect priority.

**Claims 1, 3 and 9 were rejected under 35 U.S.C. §102(b) as being anticipated by Oswald et al. ("Solution Structure of Peptide Toxins That Block Mechanosensitive Ion Channels," *The Journal of Biological Chemistry*, Vol. 277, No. 37, Issue of September 13, pp 3443-34450).**

It is the position of the Office Action that Oswald discloses the invention as claimed. The Office Action again notes that the claims are interpreted such that "represented by" is broadly interpreted to include larger peptides that include SEQ ID NO: 1. It is the position of the Office Action that Oswald discloses the GsMTx4 peptide in Figure 1C, which meets the limitations of the claims.

Amendment  
Serial No. 10/550,102  
Attorney Docket No. 053057

With respect to claim 1, Applicants respectfully submit that the above-referenced amendment to delete the phrase “represented by” is sufficient to overcome the invention as claimed. Thus, amended claim 1 requires a purified polypeptide consisting of SEQ ID NO: 1. Although the GsMTx4 peptide includes SEQ ID NO: 1, claim 1 is patentable over Oswald, as the peptide disclosed in GsMTx4 includes 25 additional amino acids. Favorable reconsideration is respectfully requested.

Furthermore, Applicants respectfully submit claim 3, as amended is not anticipated by Oswald. Specifically, Applicants herein amend claim 3 in order to require a polypeptide consisting of SEQ ID NO: 1, of which “one or two amino acids” have been deleted, substituted, inserted or added. On the other hand, GsMTx-4 of Oswald differs from SEQ ID NO: 1 in that approximately 25 amino acids are added. Accordingly, Applicants respectfully submit that Oswald does not disclose or suggest the invention as recited by claim 3.

Additionally, Applicants note that in the telephone interview of July 11, 2007, the Examiner requested clarification as to whether claim 10 was directed at a medicament or a method of treatment. In response, Applicants herein amend claim 10 in order to clearly recite a medicament. Applicants respectfully submit that claim 10 is eligible for rejoinder.


For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants’ undersigned attorney.

Amendment  
Serial No. 10/550,102  
Attorney Docket No. 053057

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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Enclosure: Verified English-language translation of priority document